

## INDOOR LOCALIZATION OF MOBILE ROBOTS

Most indoor-applications of mobile robots are bound to static guide wires. For independent indoor localization, odometric methods based on onboard-motion sensors can be applied. A robot can e.g. estimate how far it has traveled relative to a starting position by integrating rotary sensors data of its wheels. However, odometry is subject to cumulative errors.

Many indoor areas have a structured floor with periodically repeating patterns of floor tiles or paving. The goal of the proposed project is to recognize these patterns with low cost cameras and to generate an incremental reference signal for the odometry. As an experimental test bed, a mobile robot with Mecanum wheels (fig. 1) for omnidirectional motion is available. The robot can move in any direction and at the same time rotate around its vertical axis without requiring a steering mechanism. The control system of the robot adjusts the rotational speed of each wheel. The measured wheel speed signals are then used to estimate the change in the position of the robot. The errors that occur e.g. due to wheel slip shall be compensated with the incremental reference signal of the image processing system.

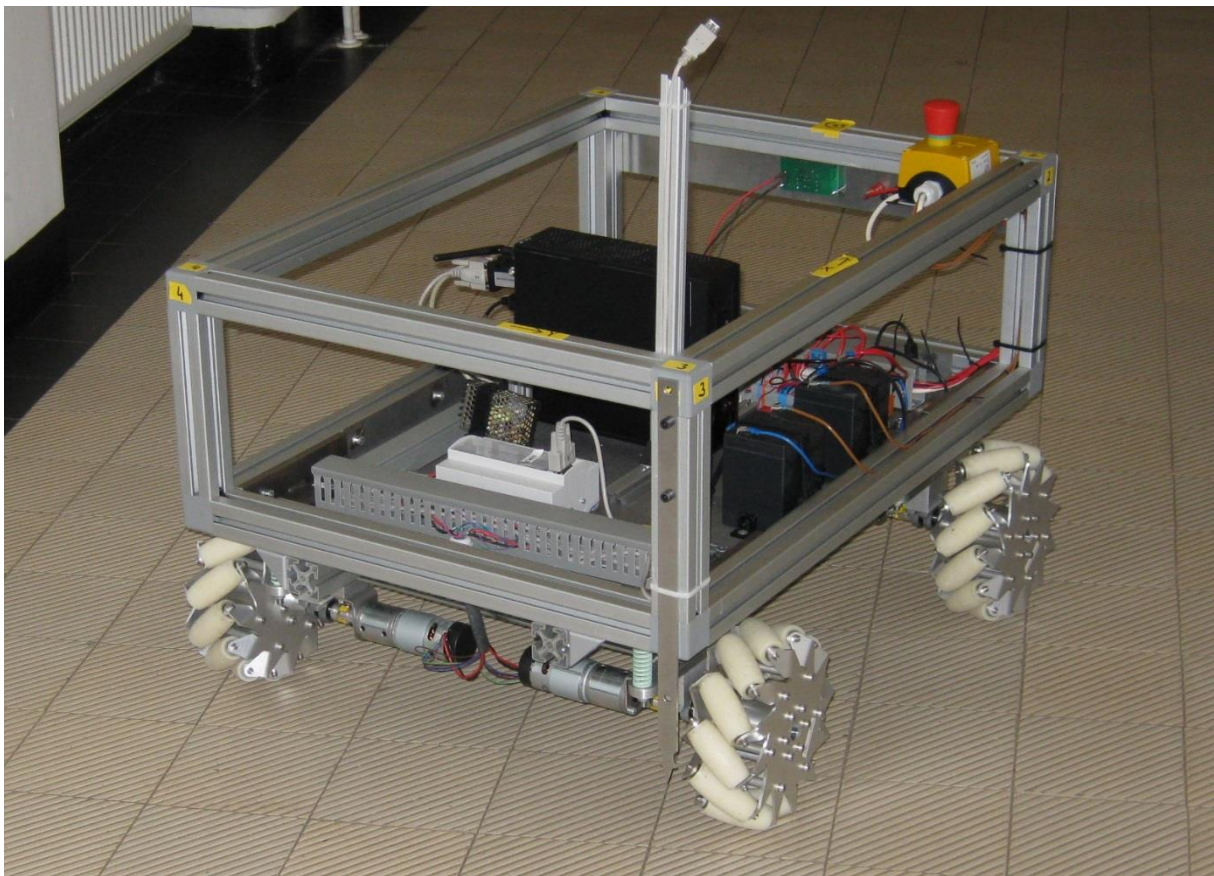


Figure 1: Mecanum vehicle